

A NEW SPECIES OF *CHELACHELES* (ACARINA: CHEYLETIDAE) FROM MISSOURI WITH A KEY TO THE KNOWN SPECIES¹

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An outstanding feature of the family Cheyletidae is its occupation of almost every conceivable habitat. One would not normally expect to find the same species occupying a specific niche at two different times of the year. This seemed to be the case for a new species of *Chelacheles* Baker 1958 that was extracted from oak material in southern Missouri normally occupied by another species prior to the discovery of the new species. No species of *Chelacheles* had been collected in the Midwest before, that of Baker (1958) originating in Portugal and that of Summers and Price (1970) in California. A third, *C. michalskii* Samsinak, occurs in Prague, Czechoslovakia.

The genus *Chelacheles* is characterized by the presence of eyes, dorsal plating weak to absent and the idiosoma rather long, with coxae II and III separated by a distance greater than the width of the body.

Key to Species of *Chelacheles*

Females

1. Propodosoma with seven pairs of dorsal setae..... *michalskii* Samsinak
Propodosoma with six pairs of dorsal setae..... 2
2. One pair of genital setae present*peritremaculatus* sp. nov.
Two pairs of genital setae present 3
3. With two pairs of anal setae *strabismus* Baker
With three pairs of anal setae..... *bipanus* S. & P.

Chelacheles peritremaculatus sp. nov.
(Figs. 1-2)

Chelacheles Baker, 1958, Proc. Entomol. Soc. Washington 60(5):234-235.

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Female — Palp tarsus with two sickles and two comb-like setae: inner comb with short, very fine teeth; outer comb with ten teeth. Sensory solenidion present ventrally. Tibial claw with two to five teeth basally. Dorsal tibial setae smooth, lanceolate, 48 microns long; internal ventrals smooth, 20 microns; external ventrals similar, 18 microns long. Palp genu with one smooth seta, 20 microns. Palp femur with four setae: dorsocentrals lanceolate, barbed, 42 microns; internal ventrals smooth, whip-like, 64 microns long; ventrocentrals smooth, whip-like, 32 microns, and external ventrolaterals smooth, acicular, 18 microns long. Rostrum long, conical. Protegmen striate longitudinally. Peritremes with nine chambers: first chamber from point of origin long, unornamented; the remaining chambers expanded inward laterally, each with pepper-spot like maculations. Hypostomal setae smooth, ultralong, 75-80 microns long. Dorsum of idiosoma with 14 pairs of setae plus one pair of ultralong humerals, 87-92 microns long. Eyes present. Dorsal shields absent. Propodosoma with six pairs of spinose dorsals, 18-24 microns long plus one pair of smooth, whip-like humerals. Hysterosoma with six pairs of dorsals, similar in form and length to propodosomals. First marginal setae of hysterosoma lightly barbed, 34 microns long. Propodosoma separated from hysterosoma by a transverse belt of striae. Genitalia terminal: two pairs of fine, acicular paragenitals, four to ten microns long, one pair of genitals similar to paragenitals and three pairs of anals as shown (Fig. 2). Idiosomal venter: one pair of acicular setae between coxae II, 12 microns; two medioventral pairs anterior to coxae III, and one medioventral pair anterior to genital slit. Setae on legs I to IV: coxae 2-1-1-2; trochanters 1-1-2-1; femora 2-2-1-1; genua 2(1)-2-2-2; tibiae 4(1)-4-4-4; tarsi 8(1)-7(1)-7-7. Numbers in parentheses refer to solenidia.

Leg I: coxae each with two setae: anterior inner pair smooth, whip-like, 30 microns; ventral pair smooth, whip-like, 100-110 microns long. Trochanters each with one lightly microns; dorsal pair stout, barbed, 36 microns long. Genua each with two setae and a sensory solenidion: internal dorsolaterals short, smooth to lightly barbed, 10 microns; external dorsolaterals smooth acicular, 18 microns long. Sensory solenidion near anterior portion of segment between dorsals, four microns long. Tibiae each with four setae and a sensory solenidion: internal ventrals smooth, acicular, 14 microns; ventrocentrals smooth, 18 microns long, dorsolaterals smooth, ultralong, 68 microns; dorsocentrals smooth, ultralong, 70-80 microns long. Sensory solenidion anterior to dorsolaterals, four microns long. Tarsi each with eight setae plus sensory solenidion Omega I. Guard seta of Omega I minute, 3-4 microns long. Omega I strongly spine-like, 18 microns long.

Leg II: coxae each with one smooth whip-like seta, 84 microns long. Trochanters each with one smooth seta, 20 microns long. Femora each with two setae: external ventrals smooth, 30 microns; dorsals lightly spinose, 34 microns long. Genua each with two setae: internal laterals smooth, 14 microns long; dorsocentrals smooth, 14 microns long. Tibiae each with four setae: ventrolaterals smooth, acicular, 18 microns; ventrocentrals long, smooth, 36 microns long; dorsocentrals smooth, acicular, 18 microns and dorsolaterals smooth, ultralong, 64 microns long. Tarsi each with seven setae and a long club-like sensory solenidion, 12 microns long.

Leg III: coxae with one smooth seta, 44 microns long. Trochanters each with two setae: ventrocentrals smooth, 24 microns; laterals spinose, stout, 44 microns long. Femora each with one spinose dorsal seta, 44 microns long. Genua each with two setae: dorsal member lightly spinose, 18 microns; lateroventrals spinose, 18 microns long. Tibiae each with four setae: ventrals about equal in length, smooth, 48 microns long; internal dorsals short, spinose, 18-20 microns; external dorsals long, smooth, 60 microns long. Tarsi each with seven setae.

Leg IV: coxae each with two smooth setae: inner pair 24 microns; outer pair shorter, 16 microns. Trochanters each with one smooth seta, 26-28 microns long. Femora each with one stout, spinose seta, 48-50 microns long. Genua each with two setae: dorsal pair spinose, 20-22 microns; ventral pair longer, spinose, 28-30 microns long. Tibiae each

with four setae: ventrals smooth, about equal in length, 58-60 microns long; internal dorsals smooth to lightly spinose, 20-22 microns; dorsosublaterals smooth, ultralong, 80 microns long. Tarsi each with seven setae. Average length of ten females, 920 microns; average width 320 microns.

Two gnathosomal forms present themselves on the males of *C. peritremaculatus* sp. nov., while the remainder of the body is essentially the same for each.

Heteromorphic male (Fig.3). — Palp tarsi each with two sickles and two combs: inner comb short, with 5-8 teeth; outer comb robust, with 11 rounded teeth. Sickles normal. Sensory solenidion present ventrally, this structure with a parallel-sided stem portion, 4 microns long, with a bulbous swelling apically. Total length of solenidion 8 microns. Palp tibiae each with a single toothed claw. Three setae present on each palp tibia: ventrocentrals acicular, smooth, 22 microns; ventroexternals similar, 22 microns; and dorsal tibial setae stout, smooth, 42 microns long. Palp genua each with one smooth dorsal seta 32 microns long. Palp femora each with three setae: internal ventrals long, smooth, 70 microns; external ventrals similar, thinner, 57 microns; dorsals stout, spinose, 65 microns long. Rostrum conical, long (fig. 2). Protegmal area extending from in front of peritremes almost halfway to end of beak. Tegmen smooth with lateral cornuae. Peritremes with five to seven chambers, the first from point of origin smooth, the remainder maculate, lateral chambers expanded inward, somewhat lobe-like. Hypostoma with one pair of smooth setae, 90-100 microns long. Idiosoma with 13 pairs of setae plus one pair of humerals, 100-110 microns long. Dorsal setae 18-25 microns long, slender, spinose. Propodosoma with six pairs of spinose dorsals; one pair of humerals; hysterosoma with seven pairs of similar setae except for caudal pair which are spatulate, smooth, 5 microns wide by 10 microns long. Propodosoma separated from hysterosoma by an elliptical band of transverse striae. Idiosoma striate longitudinally. Lateroventral pair of hysterosomals spinose, 30-35 microns long. Genitalia terminal: one pair of paragenital-like setae, 15 microns; one pair of genitals and one pair of anals. Idiosomal venter: one smooth pair between coxae II, 20 microns; one smooth pair of medioventrals, 25 microns, and one smooth pair between coxae III, 11 microns long. Setae on legs I to IV: coxae 2-1-1-2; trochanters 1-1-2-1; femora 2-2-1-1; genua 2(1)-2-2-2; tibiae 4(1)-4-4-4; tarsi 8(1)-7(1)-7(1)-7.

Leg I: coxae each with two setae: ventrocentrals smooth, 64 microns; anterior pair similar, 30 microns long. Trochanters each with one short, smooth seta, 10 microns long. Femora each with two setae: ventrals smooth, 28 microns; dorsals stout, spinose, 30 microns long. Genua each with two dorsal setae similar in length, 20 microns and a dorsal sensory solenidion 4 microns long. Tibiae each with four setae and a sensory solenidion: internal ventrals thin, smooth, 50 microns; externals similar, 16-20 microns long; internal dorsals thin, smooth, 70 microns; externals similar, 64-68 microns long. Sensory solenidion dorsal, 4 microns long. Tarsi each with eight setae and a stout sensory solenidion, 16 microns long. Guard seta of Omega I very fine, short.

Leg II: coxae each with one smooth seta, 80 microns long. Trochanters each with one smooth seta, 14-16 microns long. Femora each with two setae: ventrocentrals smooth, thin, 28 microns; dorsals stout, spinose, 26-28 microns long. Genua each with two dorsal setae similar in length, 10-14 microns long. Tibiae each with four setae: internal ventrals smooth, 16 microns; externals thinner, smooth, 60 microns long; dorsocentrals short, apparently smooth, 8-16 microns; and dorsolaterals smooth, 50 microns long. Tarsi each with seven setae and a stout sensory solenidion 10 microns long.

Leg III: coxae each with one smooth seta, 30-35 microns. Trochanters each with two setae: ventrals smooth, acicular, 12 microns; laterals stout, spinose, 36 microns long. Femora each with one stout, spinose dorsal seta, 46 microns long. Genua each with two setae: ventrals stout, spinose, 16 microns; dorsals similar, 16-18 microns long. Tibiae each with four setae: internal ventrals smooth, whip-like, 46 microns; externals similar, shorter, 34 microns long; dorso-internals smooth, 16 microns; and dorso-externals smooth, 64-70 microns long. Tarsi each with seven setae and a stout ventrolateral sensory solenidion, 8 microns long.

Leg IV: coxae each with two setae: internals smooth, needle-like, 16 microns; externals similar, 12 microns long. Trochanters each with one smooth, whip-like central seta, 18 microns long. Femora each with one stout, spinose dorsal seta, 38-40 microns long. Genua each with two spinose setae: ventrals 22 microns; dorsals 16 microns long. Tibiae each with four setae: internal ventrals smooth, whip-like, 50 microns; externals similar, 40 microns long; dorsolaterals spinose, 20 microns and dorsocentrals smooth, 70 microns long. Tarsi each with seven setae. Claws of all tarsi moderately hooked. Length of male, including rostrum, 368 microns; width 128 microns.

Normal male (Fig. 4)—Palptarsi each with two combs and two sickles: inner comb lightly toothed; outer comb with 9-11 teeth. Sensory solenidion present ventrally, club-shaped. Palptibial claws each with one or two teeth basally. Palp tibiae each with three setae: dorsal tibial setae smooth, long, 20-40 microns; internal laterals smooth, 26 microns; ventrals smooth, 16 microns long. Palp genua each with one smooth dorsal seta, 15 microns long. Palp femora each with three setae: internal ventrals long, smooth, 30-35 microns; ventrocentrals similar, 38-40 microns; dorsocentrals stout, spinose, arising from a tubercle, 34 microns long. Rostrum long, conical, setigerous. Prolegmen area short, smooth to lightly striate. Tegmen finely striated, with minute pores. Peritremes with eight to nine chambers: first chamber of peritremes long, smooth, remaining chambers maculate, some expanded inward laterally. Hypostomal setae smooth, ultralong, 46-50 microns long. Idiosoma with 13 pairs of dorsals plus one pair of smooth, ultralong humerals. All dorsals except humerals and last pair of caudodorsals spinose, these paddle-shaped, 5 microns wide by 10 microns long. Propodosoma with six pairs of spinose dorsals, 14-16 microns long, and one pair of humerals, 70-75 microns long. Propodosoma separated from hysterosoma by an elliptical band of transverse striae. Hysterosoma with seven pairs of dorsals similar in length to propodosomals except for the last four pairs of dorsals: fourth pair from genital opening eight microns; second and third pair five to six microns long and first pair from genital opening curved, inflated, bolo-shaped, five microns long. Lateroventral pair of hysterosoma barbed, 22 microns long. Genitalia terminal: one pair of paragenital-like setae, 16 microns; two pairs of genitals; anals absent. Aedeagal opening dorsal. Idiosomal venter: one pair of smooth setae between coxae II, 10 microns; one pair of smooth setae in line with lateroventrals, 14 microns long; and one pair of smooth setae between coxae III, 10 microns long. Setae on legs I to IV: coxae 2-1-1-2; trochanters 1-1-2-1; femora 2-2-1-1; genua 2(1)-2-2-2; tibiae 4(1)-4-4-4; tarsi 8(1)-7(1)-7(1)-7.

Leg I: coxae each with two smooth setae: internal anterior pair fine, whip-like, 14 microns; ventrolaterals long, whip-like, 48 microns long. Trochanters each with one seta, 10 microns long. Femora each with two setae: ventrals smooth, 20 microns; dorsals spinose, stout, 28 microns long. Genua each with two setae and a sensory solenidion: internal dorsals smooth, 10 microns; dorsocentrals smooth, 14 microns long. Sensory solenidion situated between and anterior to dorsals, three to four microns long. Tibiae each with four setae and a sensory solenidion: internal ventrolaterals smooth, 34 microns; ventrocentrals smooth, 18 microns long; internal dorsals smooth, lanceolate, ultralong, 64 microns; external dorsals smooth, 52 microns long. Sensory solenidion present dorsally, near anterior portion of segment, five to seven microns long. Tarsi each with eight setae and a strongly annulated sensory solenidion (Ω 1), 16 microns long. Ω 1 appears to arise from a tubercular base, and guard seta of same very fine and short.

Leg II: coxae each with one smooth, whip-like seta, 54 microns long. Trochanters each with one smooth seta, 14-16 microns long. Femora each with two setae: ventrals smooth, 20 microns; dorsals stout, spinose, 22 microns long. Genua each with two setae: dorso-internals smooth to lightly barbed, 12-18 microns long. Tibiae each with four setae: internal ventrals smooth to lightly barbed, 18-20 microns; ventrals smooth, whip-like, 20 microns long; internal dorsals spinose, 10 microns and external dorsals

smooth, ultralong, 44 microns. Tarsi each with seven setae and a sensory solenidion, dorsally located, strongly annulated, 9 microns long.

Leg III: coxae each with one smooth, acicular seta, 32 microns long. Trochanters each with two setae: ventrocentrals smooth, 12 microns; laterals smooth, 30 microns long. Femora each with one stout, barbed seta, 36 microns long. Genua each with two setae: ventro-externals spinose, 12-14 microns; dorsals barbed, 12 microns long. Tibiae each with four setae: internal ventrals smooth to lightly barbed, 36 microns; external ventrals smooth, 18 microns long; internal dorsals spinose, 14 microns and external dorsals smooth, ultralong, 48 microns. Tarsi each with seven setae and a ventro-laterally situated sensory solenidion, 9 microns long.

Leg IV: coxae each with two setae: internals smooth, 22 microns; externals smooth, 12 microns long. Trochanters each with one seta, smooth, 14 microns long. Femora each with one stout, spinose dorsal seta, 30 microns long. Genua each with two setae: ventro-externals spinose, 18 microns long. Tibiae each with four setae: ventrals smooth, about equal in length, 30-34 microns long; internal dorsals spinose, 16 microns and external dorsals smooth, ultralong, 54 microns. Tarsi each with seven setae. Length of male, 270 microns; width 98 microns.

Nymph. — Palp tarsi each with two sickles and two combs: inner comb reduced with three to four teeth; outer comb stout with seven to nine teeth. Club-like sensory solenidion present ventrally. Palptibiae each with three setae: internal ventrals acicular, smooth, 8 microns; ventrals long, smooth, 11 microns; dorsal tibial setae stouter, smooth, 17-19 microns set on a tubercular base. Palp genua each with one smooth seta, 12 microns long. Palp femora each with four setae: dorsocentrals stout, strap-like, barbed, 38-41 microns long; internal ventrals long, whip-like, smooth, 20 microns; external ventrals similar, shorter, 17 microns, and one pair of ventrolaterals near anterolateral portion of segment, these smooth, 6 microns long. Inner basal region of femora adjacent to tegmen-protegmen with discontinuous maculated striae. Palp coxae lightly striate. Rostrum short, somewhat conical. Protegmen short with longitudinal striae. Tegmen lightly striate. Peritremes with seven to eight chambers, the first pair of chambers from point of origin long, smooth; the remainder smaller, expanded inward laterally, with dot like maculations. Hypostoma with one pair of smooth setae, 36 microns. Idiosoma with 12 pairs of dorsal setae, 14-16 microns long. One pair of long humerals, 60 microns. Idiosomal venter: one pair of fine, smooth setae, 14 microns long between coxae II; one pair of smooth acicular medioventrals, 12 microns; one pair of short, smooth setae between coxae III, 6 microns; one pair between coxae IV, 8 microns and one pair of smooth setae anterior to genital field, 6 microns long. Genitalia terminal: one pair of stout paragenitals, 6 microns; two pair of smooth, stout genitals: anterior pair 6 microns; posterior pair 10 microns; one pair of smooth anals, 4-6 microns long. Legs I to IV: coxae 2(1)-1-2-2; trochanters 1-1-2-1; femora 2-2-1-1; genua 2(1)-2-2-2; tibiae 4(1)-4-4-4; tarsi 7(1)-7(1)-7-7.

Leg I: coxae with one pair of smooth setae: inner anterior pair fine, 16 microns; ventrocentral pair long, 50 microns. Trochanters with one seta each, situated on inner, antero-lateral portion of segment, smooth, 12 microns long. Femora with one pair of setae: ventro-centrals smooth, acicular, 16 microns; dorsals stout, spinose, 26 microns long. Genua with one pair of short, smooth setae: inner pair of each segment 12 microns; outer 10 microns long. Sensory solenidion present dorsally, 4 microns long. Tibiae with four setae and a stout, club-shaped sensory solenidion dorsally: internal ventrals short, smooth, 12 microns; ventrocentrals smooth, 30 microns long; dorsocentrals smooth, long, 50 microns; external dorsals smooth, 40 microns long. Sensory solenidion 4 microns long. Tarsi with seven setae and a stout sensory solenidion dorsally, 10 microns long.

Leg II: coxae with one smooth ventro-central seta, 40 microns long. Trochanters with one smooth anterolateral seta, 14 microns long. Femora with one pair of setae: ventrals smooth, fine, 20 microns; dorsocentrals stout, spinose, 24 microns long. Genua with one

pair of smooth setae, equal in length, 10 microns long. Tibiae with four setae: internal ventrals spinose, 10 microns; ventrocentrals smooth, long, 24 microns; internal dorsals short, acicular, 10 microns, and dorsocentrals smooth, 34 microns long. Tarsi with seven setae and a stout, dorsolateral sensory solenidion, 8-10 microns long.

Leg III: coxae with one smooth seta, 24 microns long. Trochanters with one pair of setae: laterals stout, minutely spinose, 30 microns; ventrals smooth, fine, 12 microns long. Femora each with one stout spinose seta, 38 microns long. Genua with one pair of spinose setae: ventrals stout, 14 microns; dorsals similar, 12 microns long. Tibiae with four setae: internal ventrals smooth, 30 microns; external ventrals smooth, 24 microns long; internal dorsals spinose, stout, 16 microns; external dorsals long, smooth, 30 microns. Tarsi with seven setae.

Leg IV: coxae with one pair of setae: internals smooth, 18 microns; externals similar, shorter, acicular, 12 microns long. Trochanters with one smooth seta, 12 microns long. Femora with one stout, spinose dorsal seta, 32 microns long. Genua with two setae: ventrals spinose, stout, 16 microns; dorsals similar, 14-16 microns long. Tibiae with four setae: ventral pair of each segment smooth, 40 microns; internal dorsals spinose, 18-20 microns long; external dorsals smooth, ultralong, 50 microns. Tarsi with seven setae. Claws of all legs moderately hooked. Body length 278 microns; width 112 microns.

Types: holotype female, allotype heteromorphic male collected seven miles south of West Plains, Howell County, Missouri on October 26, 1972 to be deposited in the collection of the Entomology Research Museum, University of Missouri, Columbia. One paratype normal male and one nymph, same data as on holotype, also to be retained in the Entomology Research Museum, University of Missouri, Columbia. Two paratype females, one paratype heteromorphic male and one nymph, same data as on holotype, to be deposited in the collection of the U. S. National Museum. Two paratype females, same data as holotype, to be deposited in the collection of the Snow Museum, University of Kansas, Lawrence. Two paratype females, same information as holotype, to be deposited in the collection of the University of California, Davis. Two paratype females, same data as holotype, to be deposited in the Canadian National Collection, Ottawa, Canada. The remaining three specimens, of which one was collected on October 4, 1972, to be retained in the collection of the Entomology Research Museum, University of Missouri, Columbia. All specimens were collected by S. E. Thewke.

The specific name of this species is derived from the maculated peritremata which it possesses.

These specimens were collected from sections of oak limbs five to thirteen centimeters in diameter. The oak had decayed to such an extent that identification of these sections to species was not possible. The surrounding oak trees were a mixture of red oak and white oak. The mites were extracted by use of the Berlese funnel method of arthropod extraction.

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ABSTRACT—A new species of cheyletid mite from south-central Missouri, including the nymphal stage and two forms of the male, is described and illustrated. A key to the known species is also presented.

Descriptors: Acarina: Cheyletidae; *Chelacheles*, a new species, Missouri; Key to known species of *Chelacheles*.

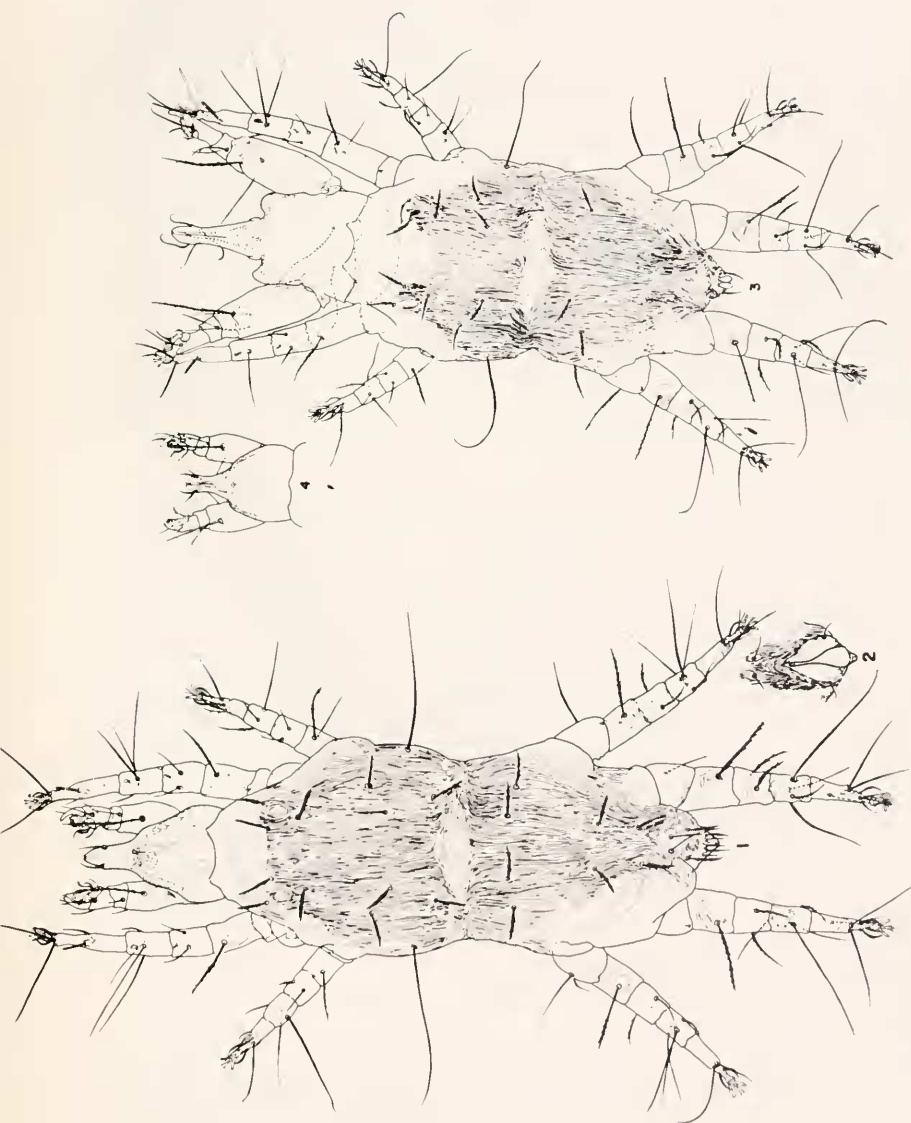


Plate I. *Chelacheles peritremaculatus*.

Fig. 1. Dorsal view of female.

Fig. 2. Genital field of female.

Plate II. *Chelacheles peritremaculatus*.

Fig. 3. Dorsal view of heteromorphic male.

Fig. 4. Dorsal view of gnathosoma of normal male.